IN THE CLAIMS:

Claims 4, 7, 9-13, 17, 20-24, 26, 31-41, 45-48, 51-54, 56-60, 63, 64, 66-72, 80, and 87-89 have been amended herein. All of the pending claims 1 through 89 are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of Claims:

1. (Previously presented) A method of applying viscous material to at least one semiconductor element, the method comprising:

providing a receptacle including at least one viscous material pool containing viscous material having an exposed surface extending upwardly to a height therein, the at least one viscous material pool including at least one opening to provide access to at least the exposed surface of the viscous material;

providing at least one vertically adjustable stop proximate the receptacle;

controlling the height of the exposed surface of the viscous material;

providing at least one semiconductor element having a first surface and at least one other surface above the first surface; and

placing the at least one semiconductor element against the at least one vertically adjustable stop such that only a specific portion of the first surface the at least one semiconductor element contacts the exposed surface of the viscous material.

2. (Previously presented) The method according to claim 1, wherein providing a receptacle including at least one viscous material pool containing viscous material comprises providing the at least one viscous material pool containing adhesive or polyimide.

3. (Previously presented) The method according to claim 2, wherein providing a receptacle including at least one viscous material pool containing viscous material comprises providing the at least one viscous material pool containing adhesive selected from the group consisting of thermoplastics, thermoset resins, flowable pastes, and B-stage adhesive materials.

4. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element against the at least one vertically adjustable stop comprises extending the specific portion of the at least one semiconductor element beyond a top surface of the exposed surface of the viscous material.

5. (Previously presented) The method according to claim 4, wherein extending comprises immersing the specific portion of the at least one semiconductor element beyond the top surface of the exposed surface of the viscous material for a time sufficient to allow the viscous material to wet the specific portion of the at least one semiconductor element.

6. (Previously presented) The method according to claim 5, wherein extending comprises immersing the specific portion of the at least one semiconductor element beyond the top surface of the exposed surface of the viscous material for approximately 10 to 25 milliseconds.

7. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element against the at least one vertically adjustable stop comprises extending the specific portion of ~~said~~ the at least one semiconductor element beyond a top surface of the exposed surface of the viscous material without breaking the surface tension of the viscous material.

8. (Previously presented) The method according to claim 1, wherein providing a receptacle comprises providing the receptacle shaped such that the exposed surface of the viscous material is presented in a precise location and configuration.

9. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element comprises placing at least one of a lead finger, a carrier substrate, a bond pad and a trace pad above the at least one opening.

10. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element comprises aligning the at least one semiconductor element above the at least one opening.

11. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element comprises biasing the at least one semiconductor element downward proximate the viscous material.

12. (Currently amended) The method according to claim 11, wherein biasing comprises providing at least one of a hydraulic biasing mechanism, a pneumatic biasing mechanism, and an ~~electrically powered~~ electrically powered biasing mechanism configured to place the at least one semiconductor element proximate the viscous material.

13. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element comprises raising the at least one viscous material pool upward proximate the at least one semiconductor element.

14. (Previously presented) The method according to claim 1, wherein controlling comprises pumping the viscous material into the at least one viscous material pool.

15. (Previously presented) The method according to claim 1, further comprising pumping the viscous material to another height above the at least one vertically adjustable stop sufficient to contact the specific portion of the at least one semiconductor element.

16. (Previously presented) The method according to claim 15, wherein pumping comprises creating a moving wave of the viscous material traveling across the at least one viscous material pool.

17. (Currently amended) The method according to claim 1, wherein placing the at least one semiconductor element comprises applying a layer of the viscous material having a thickness between 0.1 to 15 mils on the specific portion of the at least one semiconductor element.

18. (Previously presented) The method according to claim 1, further comprising coating at least the specific portion of the at least one semiconductor element with a surfactant prior to placing the at least one semiconductor element against the at least one vertically adjustable stop.

19. (Previously presented) The method according to claim 1, further comprising adding an adhesion promoter to the viscous material, wherein the adhesion promoter is selected from the group consisting of silane, siloxane, and polyimide siloxane.

20. (Currently amended) The method according to claim 1, wherein ~~said~~ controlling the height of the exposed surface of ~~said~~ the viscous material comprises leveling ~~said~~ the exposed surface.

21. (Currently amended) The method according to claim 20, wherein ~~said~~ leveling comprises:

providing ~~said~~ the viscous material to ~~said~~ the at least one viscous material pool such that ~~said~~ the exposed surface of ~~said~~ the viscous material reaches an initial exposed surface height higher than a desired exposed surface height; and

flattening ~~said~~ the initial exposed surface height to the desired exposed surface height.

22. (Currently amended) The method according to claim 21, wherein ~~said~~ flattening comprises metering ~~said~~ the initial exposed surface height with a wiper.

23. (Currently amended) The method according to claim 21, wherein ~~said~~ providing ~~said~~ the viscous material comprises pumping ~~said~~ the viscous material into ~~said~~ the at least one viscous material pool.

24. (Currently amended) The method according to claim 21, wherein ~~said~~ flattening ~~said~~ the initial exposed surface height comprises drawing back ~~said~~ the viscous material to flatten ~~said~~ the exposed surface of ~~said~~ the viscous material.

25. (Previously presented) The method according to claim 1, wherein controlling the height of the exposed surface of the viscous material comprises employing a detection mechanism.

26. (Currently amended) The method according to claim 25, wherein controlling the height of the exposed surface of the viscous material comprises:
delivering the viscous material to the at least one viscous material pool;
providing the detection mechanism comprising a transmitter, a receiver, and a control signal;
determining the height of the exposed surface with ~~said~~ the transmitter and the receiver; and
generating the control signal to control delivery of the viscous material to the at least one viscous material pool.

27. (Previously presented) The method according to claim 26, wherein generating the control signal comprises triggering a pump to stop delivering the viscous material to the at least one viscous material pool when a desired height of the exposed surface is achieved.

28. (Previously presented) The method according to claim 26, wherein generating the control signal comprises triggering a valve to shut to prevent the viscous material from entering the at least one viscous material pool.

29. (Previously presented) The method according to claim 25, wherein employing a detection mechanism comprises providing a laser transmitter, wherein a light beam from the laser transmitter is altered by the exposed surface and wherein a receiver detects the alteration of the light beam and then generates a control signal.

30. (Previously presented) The method according to claim 25, wherein employing a detection mechanism comprises providing an ultrasonic transmitter, wherein an ultrasonic sound wave from the ultrasonic transmitter is altered by the exposed surface and wherein a receiver detects the alteration in the ultrasonic sound wave and then generates a control signal.

31. (Currently amended) The method according to claim 1, wherein ~~said~~ controlling comprises providing a coating stencil proximate an upper surface of ~~said~~ the receptacle, ~~said~~ the coating stencil including:

a generally flat and generally horizontal top surface; and

a plurality of apertures aligned to apply ~~said~~ the viscous material to ~~said~~ the specific portion of ~~said~~ the at least one semiconductor element, ~~said~~ the plurality of apertures sized and configured to control extrusion of ~~said~~ the viscous material through ~~said~~ the coating stencil to increase the exposed surface of ~~said~~ the viscous material.

32. (Currently amended) The method according to claim 31, wherein ~~said~~ providing a coating stencil comprises providing ~~said~~ the coating stencil wherein the plurality of apertures are substantially rectangular in shape.

33. (Currently amended) The method according to claim 31, wherein ~~said~~ providing a coating stencil comprises providing ~~said~~ the coating stencil wherein the plurality of apertures of ~~said~~ the coating stencil are substantially square in shape.

34. (Currently amended) The method according to claim 31, wherein ~~said~~ providing a coating stencil comprises ~~said~~ sizing and ~~said~~ configuring ~~said~~ the plurality of apertures of ~~said~~ the coating stencil as a result of considering a viscosity of ~~said~~ the viscous material.

35. (Currently amended) The method according to claim 34, wherein ~~said~~ providing a coating stencil comprises ~~said~~ sizing and ~~said~~ configuring ~~said~~ the plurality of apertures of ~~said~~ the coating stencil to suit a viscous material viscosity ranging from approximately 1000 to 500,000 centipoise.

36. (Currently amended) The method according to claim 34, wherein ~~said~~ providing a coating stencil comprises ~~said~~ sizing and ~~said~~ configuring ~~said~~ the plurality of apertures of ~~said~~ the coating stencil to optimally accommodate a viscous material viscosity of approximately 62,000 centipoise.

37. (Currently amended) The method according to claim 34, wherein ~~said~~ providing a coating stencil comprises ~~said~~ sizing and ~~said~~ configuring the ~~said~~ the plurality of apertures of ~~said~~ the coating stencil to optimally accommodate a viscous material viscosity of approximately 62,000 centipoise at a temperature of approximately 77° F (25° C).

38. (Currently amended) The method according to claim 31, wherein ~~said~~ providing a coating stencil comprises arranging the plurality of apertures of ~~said~~ the coating stencil generally parallel to each other and spaced so as to have a centerline pitch between apertures of .020 inches (.051 cm).

39. (Currently amended) The method according to claim 31, wherein ~~said~~ providing a coating stencil comprises providing ~~said~~ the coating stencil having 23 apertures.

40. (Currently amended) The method according to claim 31, wherein ~~said~~ providing a coating stencil comprises ~~said~~ sizing ~~said~~ the plurality of apertures of ~~said~~ the coating stencil to be .260 inches (.660 cm) in length and .010 inches (.025 cm) in width.

41. (Currently amended) The method according to claim 31, further comprising providing a vacuum on a bottom side of ~~said~~ the coating stencil.

42. (Previously presented) The method according to claim 1, further comprising providing a circulation mechanism configured to circulate the viscous material and maintain uniformity of the viscous material.

43. (Previously presented) The method according to claim 1, wherein providing a receptacle comprises providing the receptacle including a housing having an inflow chamber in fluid communication with the at least one viscous material pool.

44. (Previously presented) The method according to claim 1, further comprising adjusting the at least one vertically adjustable stop to a desired height.

45. (Currently amended) The method according to claim 1, wherein ~~said~~ providing at least one vertically adjustable stop comprises providing a buoyant stop independent from ~~said~~ the receptacle.

46. (Currently amended) The method according to claim 45, wherein ~~said~~ placing the at least one semiconductor element against ~~said~~ the at least one vertically adjustable stop comprises pressing ~~said~~ the at least one semiconductor element down on the buoyant stop to displace ~~said~~ the viscous material upward toward ~~said~~ the specific portion of ~~said~~ the at least one semiconductor element.

47. (Currently amended) The method according to claim 46, further comprising providing a mechanism to press ~~said~~ the at least one semiconductor element against ~~said~~ the at least one vertically adjustable stop and a pressure sensor associated with ~~said~~ the buoyant stop, wherein ~~said~~ the pressure sensor triggers the mechanism to stop pressing when a predetermined pressure is attained.

48. (Currently amended) A method of applying viscous material to at least one semiconductor element, the method comprising:

providing a receptacle including at least one viscous material pool containing viscous material having an exposed surface extending upwardly to a height therein, the at least one viscous material pool including at least one outlet to present at least the exposed surface of the viscous material;

providing at least one vertically adjustable stop proximate the receptacle;

extruding the viscous material through a coating stencil to reveal the exposed surface;

providing at least one semiconductor element having a bottom surface and at least one other surface above the bottom ~~surface~~ surface; and

positioning the at least one semiconductor element proximate the at least one vertically adjustable stop such that only a specific portion of the bottom surface of the at least one semiconductor element contacts the exposed surface of the viscous material.

49. (Previously presented) The method according to claim 48, wherein providing a receptacle including at least one viscous material pool containing viscous material comprises providing the at least one viscous material pool containing adhesive or polyimide.

50. (Previously presented) The method according to claim 49, wherein providing a receptacle including at least one viscous material pool containing viscous material comprises providing the at least one a viscous material pool containing adhesive selected from the group consisting of thermoplastics, thermoset resins, flowable pastes, and B-stage adhesive materials.

51. (Currently amended) The method according to claim 49, wherein positioning the at least one semiconductor element proximate the at least one vertically adjustable stop comprises extending the specific portion of the at least one semiconductor element beyond a top surface of the exposed surface of the viscous material.

52. (Previously presented) The method according to claim 51, wherein extending comprises immersing the specific portion of the at least one semiconductor element beyond the top surface of the exposed surface of the viscous material for a time sufficient to allow the viscous material to wet the specific portion of the at least one semiconductor element.

53. (Previously presented) The method according to claim 52, wherein extending comprises immersing the specific portion of the at least one semiconductor element beyond the top surface of the exposed surface of the viscous material for approximately 10 to 25 milliseconds.

54. (Currently amended) The method according to claim 48, wherein positioning the at least one semiconductor element proximate the at least one vertically adjustable stop comprises extending the specific portion of the at least one semiconductor element beyond a top surface of the exposed surface of the viscous material without breaking the surface tension of the viscous material.

55. (Previously presented) The method according to claim 48, wherein providing a receptacle comprises providing a receptacle shaped such that the exposed surface of the viscous material is presented in a precise location and configuration.

56. (Currently amended) The method according to claim 48, wherein positioning at the least one semiconductor element comprises positioning at least one of a lead finger, a carrier substrate, a bond pad and a trace pad above the at least one outlet.

57. (Currently amended) The method according to claim 48, wherein positioning the at least one semiconductor element comprises aligning the at least one semiconductor element above the at least one outlet.

58. (Currently amended) The method according to claim 48, wherein positioning the at least one semiconductor element comprises biasing the at least one semiconductor element downward proximate the viscous material.

59. (Currently amended) The method according to claim 58, wherein biasing comprises providing at least one of a hydraulic biasing mechanism, a pneumatic biasing mechanism, and an ~~electrically powered~~ electrically powered biasing mechanism configured to place the at least one semiconductor element proximate the at least one vertically adjustable stop.

60. (Currently amended) The method according to claim 58, wherein positioning the at least one semiconductor element comprises raising the at least one viscous material pool upward proximate the at least one semiconductor element.

61. (Previously presented) The method according to claim 48, further comprising pumping the viscous material into the at least one viscous material pool.

62. (Previously presented) The method according to claim 48, wherein extruding comprises pumping the viscous material through the coating stencil to another height above the at least one vertically adjustable stop sufficient to contact the specific portion of the at least one semiconductor element.

63. (Currently amended) The method according to claim 48, wherein positioning the at least one semiconductor element comprises applying a layer of the viscous material having a thickness between 0.1 to 15 mils on the specific portion of the at least one semiconductor element.

64. (Currently amended) The method according to claim 48, further comprising coating at least the specific portion of the at least one semiconductor element with a surfactant prior ~~to the~~ to positioning the at least one semiconductor element proximate the at least one vertically adjustable stop.

65. (Previously presented) The method according to claim 48, further comprising adding an adhesion promoter to the viscous material, wherein the adhesion promoter is selected from the group consisting of silane, siloxane, and polyimide siloxane.

66. (Currently amended) The method according to claim 48, wherein ~~said~~ extruding comprises leveling ~~said~~ the exposed surface.

67. (Currently amended) The method according to claim 48, further comprising controlling the height of ~~said~~ the exposed surface of ~~said~~ the viscous material by employing a detection mechanism.

68. (Currently amended) The method according to claim 67, wherein ~~said~~ controlling the height of ~~said~~ the exposed surface of ~~said~~ the viscous material comprises:

delivering ~~said~~ the viscous material to ~~said~~ the at least one viscous material pool;

providing ~~said~~ the detection mechanism comprising a transmitter, a receiver, and a control signal;

determining the height of ~~said~~ the exposed surface with ~~said~~ the transmitter and ~~said~~ the receiver; and

generating ~~said~~ the control signal to control delivery of ~~said~~ the viscous material to ~~said~~ the at least one viscous material pool.

69. (Currently amended) The method according to claim 68, wherein ~~said~~ generating ~~said~~ the control signal comprises triggering a pump to stop delivering ~~said~~ the viscous material to ~~said~~ the at least one viscous material pool when a desired height of ~~said~~ the exposed surface is achieved.

70. (Currently amended) The method according to claim 68, wherein ~~said~~ generating ~~said~~ the control signal comprises triggering a valve to shut to prevent ~~said~~ the viscous material from entering ~~said~~ the at least one viscous material pool.

71. (Currently amended) The method according to claim 68, wherein ~~said~~ providing ~~said~~ the detection mechanism comprises providing a laser transmitter, wherein a light beam from ~~said~~ the laser transmitter is altered by the exposed surface and wherein the receiver detects the alteration of ~~said~~ the light beam and then generates ~~said~~ the control signal.

72. (Currently amended) The method according to claim 68, wherein ~~said~~ providing ~~said~~ the detection mechanism comprises providing an ultrasonic transmitter, wherein an ultrasonic sound wave from ~~said~~ the ultrasonic transmitter is altered by the exposed surface and wherein the receiver detects the alteration in the ultrasonic sound wave and then generates the control signal.

73. (Previously presented) The method according to claim 48, wherein extruding the viscous material through a coating stencil to reveal the exposed surface comprises providing the coating stencil including:

a generally planar horizontal top surface; and

a plurality of apertures aligned to apply the viscous material to the specific portion of the at least one semiconductor element, the plurality of apertures sized and configured to control extrusion of the viscous material through the coating stencil to increase the exposed surface of the viscous material.

74. (Previously presented) The method according to claim 73, wherein providing the coating stencil comprises providing a coating stencil wherein the plurality of apertures are substantially rectangular in shape.

75. (Previously presented) The method according to claim 73, wherein providing the coating stencil comprises providing a coating stencil wherein the plurality of apertures of the coating stencil are substantially square in shape.

76. (Previously presented) The method according to claim 73, wherein providing the coating stencil comprises the sizing and the configuring the plurality of apertures of the coating stencil as a result of considering a viscosity of the viscous material.

77. (Previously presented) The method according to claim 76, wherein providing the coating stencil comprises the sizing and the configuring the plurality of apertures of the coating stencil to suit a viscous material viscosity ranging from approximately 1000 to 500,000 centipoise.

78. (Previously presented) The method according to claim 76, wherein providing the coating stencil comprises the sizing and the configuring the plurality of apertures of the coating stencil to optimally accommodate a viscous material viscosity of approximately 62,000 centipoise.

79. (Previously presented) The method according to claim 76, wherein providing the coating stencil comprises the sizing and the configuring the plurality of apertures of the coating stencil to optimally accommodate a viscous material viscosity of approximately 62,000 centipoise at a temperature of approximately 77° F (25° C).

80. (Currently amended) The method according to claim 73, wherein providing the coating stencil comprises arranging the plurality of apertures of the coating stencil generally parallel to each other ~~and are~~ and spaced so as to have a centerline pitch between apertures of .020 inches (.051 cm).

81. (Previously presented) The method according to claim 73, wherein providing the coating stencil comprises providing the coating stencil having 23 apertures.

82. (Previously presented) The method according to claim 73, wherein providing the coating stencil comprises the sizing the plurality of apertures of the coating stencil to be .260 inches (.660 cm) in length and .010 inches (.025 cm) in width.

83. (Previously presented) The method according to claim 48, further comprising providing a vacuum on a bottom side of the coating stencil.

84. (Previously presented) The method according to claim 48, further comprising providing a circulation mechanism configured to circulate the viscous material and maintain uniformity of the viscous material.

85. (Previously presented) The method according to claim 48, wherein providing a receptacle comprises providing the receptacle including a housing having an inflow chamber in fluid communication with the at least one viscous material pool.

86. (Previously presented) The method according to claim 48, further comprising adjusting the at least one vertically adjustable stop to a desired height.

87. (Currently amended) The method according to claim 48, wherein providing at least one vertically adjustable stop comprises providing a buoyant stop independent from the receptacle.

88. (Currently amended) The method according to claim 87, wherein positioning the at least one semiconductor element proximate the at least one vertically adjustable stop comprises pressing the at least one semiconductor element down on the buoyant stop to displace ~~said~~ the viscous material upward toward the specific portion of the at least one semiconductor element.

89. (Currently amended) The method according to claim 88, further comprising providing a mechanism to press the at least one semiconductor element against the at least one vertically adjustable stop and a pressure sensor associated with the buoyant stop, wherein the pressure sensor triggers the mechanism to stop pressing when a predetermined pressure is attained.